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## Hereditary Hemorrhagic Telangiectasia Consent Form (Deletion/Duplication Testing)

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### BACKGROUND

Hereditary hemorrhagic telangiectasia (HHT), also called Osler-Rendu-Weber disease, is a blood vessel disorder characterized by abnormal, direct connections between arteries and veins. Telangiectases are small abnormal blood vessels, which appear as red spots often found on the nose, lips, tongue, fingers, and intestines. Larger abnormal blood vessels called arteriovenous malformations (AVMs) can occur in the internal organs, most commonly the lung, liver, and brain. Bleeding telangiectases in the nose or intestines can be either a minor annoyance or a major medical problem. Undetected and untreated lung and brain AVMs are a significant cause of life-threatening or disabling complications.

A large percentage of families with HHT have a mutation in either the endoglin gene (called HHT type 1) or the ACVRL1 (ALK 1) gene (called HHT type 2).

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### PURPOSE

I will be tested only for specific types of alterations in the endoglin and ACVRL1 HHT genes called large deletions or duplications. Large deletions or duplications are not detectable by a common DNA analysis technique called sequencing.

The purpose of this genetic testing is to determine whether an altered HHT gene can be detected which would predict the development of telangiectases and AVMs. Individuals with clinical features of HHT are candidates for this testing. If a deletion or duplication (mutation) in an HHT gene is identified using my blood sample, diagnostic testing for HHT in at risk relatives is then possible. Individuals identified as having HHT can benefit from consultation with medical practitioners who are knowledgeable about the particular clinical dilemmas unique to HHT. There is specific medical screening and management routinely recommended to all patients with HHT.

I have had the opportunity to discuss the purpose of HHT genetic testing for myself.

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### TESTING PROCEDURE

Several teaspoons of blood will be drawn to try to identify an HHT causing mutation. I agree to allow information to be provided to ARUP Laboratories about my medical and family history to aid in the interpretation of the test results.

Testing is expected to take approximately three weeks to complete.

No information pertaining to my genetic test results will be provided to any of my relatives without my consent.

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### RISKS AND DISCOMFORTS

I understand that there is minimal risk involved with drawing a blood sample. This includes pain at the blood drawing site, bruising, bleeding, and risk for infection.

The risks of information disclosure regarding my genetic diagnosis of HHT include depression, anxiety, anger, and fear of the future. This result could affect my relationships with family members and loved ones. Some individuals may experience feelings of guilt or anxiety even if they are found not to have an altered gene since other family members may have an altered gene.

I understand that if I learn that I have an altered HHT gene, my health and life insurance rates, my ability to obtain health, disability, or life insurance and my employability could be affected. Certain health, disability, and life insurance companies may consider an HHT alteration or mutation to represent a "preexisting condition," and I may be responsible for disclosing this information prior to obtaining new health or life insurance.

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### RESULTS

I understand that deletion/duplication testing for HHT only detects about 10% of mutations which cause HHT. It is meant to be used in combination with sequence analysis for the most comprehensive HHT testing. It is also known that mutations in additional genes, not currently identified or testable, can cause HHT. I may have an HHT-causing mutation that will not be detected by this test.

I understand that there are **two possible test results**:

**1. Positive: A deletion or duplication (mutation)** is identified. I understand that this means that I will likely develop symptoms of HHT and should be medically screened and managed accordingly. This result would also indicate risk for HHT in my relatives. Occasionally an additional sample is requested to confirm a positive result.

**2. Negative: No HHT gene mutation** is identified. I know that deletion/duplication testing is unable to detect most HHT causing mutations. This means that I may still have HHT due to a mutation that was not detected.

The accuracy rate for this test is believed to be 90%. Rare errors can occur due to misincorporation of DNA bases by the enzyme used to perform the test, sample misidentification, sample contamination, primer site mutations, and general laboratory error.

When testing has been completed, I understand that I will be contacted regarding my results by the office/center where I am being counseled and signing this consent form. I understand that ARUP Laboratories will report results to the physician or clinician requesting this test.

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### **BENEFITS OF RECEIVING RESULTS**

This test may provide information about whether my relatives, including my children, are at high risk to have or develop HHT. If I am found to have a gene deletion or duplication (mutation), I could advise my relatives of this. My family members could then have counseling to decide whether or not they wish to be tested to see if they inherited the same mutation. If a gene mutation has already been identified in my family, but is not detected in me, I may experience some sense of relief as a result. If it is determined that I have an HHT gene mutation, I will be able to initiate a comprehensive surveillance plan for the variable and complex symptoms of HHT. It is the opinion of acknowledged experts in the field that enhanced surveillance will have health benefits.

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### **LIMITATIONS OF DELETION/DUPLICATION TESTING FOR HHT**

I understand that deletion/duplication testing alone detects approximately 10% of mutations which cause HHT. It is meant to be used in combination with sequencing of the known HHT genes for comprehensive testing.

I understand that there are limitations as to what genetic test results can tell me. This testing will not provide me with any information about my current health status. It does not predict which HHT symptoms I will develop or their severity. I understand that it is possible to have HHT symptoms and no HHT mutation detected by this testing.

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### **USE OF SPECIMENS**

My (or my child's or my fetus') DNA sample may be stored indefinitely to be used for test validation or education after personal identifiers are removed. No clinical tests other than the ones authorized will be performed. I may request disposal of my blood and DNA sample following completion of the test requested above by contacting the laboratory at (800) 242-2787 ext. 3301. For more information about ARUP, please refer to [www.aruplab.com](http://www.aruplab.com).

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### **REQUEST FOR MORE INFORMATION**

I understand that I may ask more questions about this testing and my results at any time. I will be given a copy of this "Consent Form" for my records.

### **CONSENT OF PATIENT**

I have explained to \_\_\_\_\_ the purpose of this genetic testing, the procedure required, and the possible risks, benefits, and limitations.

Signature of professional obtaining informed consent: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

I have read and received a copy of this consent form. I understand the information provided in this document and I have had the opportunity to ask questions about the testing, the procedure, and the associated risks, benefits, and limitations. I agree to have genetic testing and accept the risks and limitations.

Patient Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Patient's Date of Birth: \_\_\_\_\_